contains species from both of these zoogeographic regions. Of the 82 species in the fauna of the Hudson basin, 13 belong to the Atlantic Slope fauna, 17 belong to the Interior Basin fauna, and 52 species are widespread in both regions.

All distributional records from the museums, published papers, and this summer's survey of about 100 sites in the mid-Hudson valley are being put into a computer database and will be freely available to all scientists.

THE INFLUENCE OF SNAIL DENSITY AND SURFACE AREA ON THE GROWTH AND DEVELOPMENT OF *BIOMPHALARIA GLABRATA*. **Suzanne G. Ayvazian,** Department of Zoology, University of Rhode Island.

The prevention of the mollusc vectored parasitic disease schistosomiasis is of medical and social significance in many Third World countries. This parasitic disease results from infection by a cercarial population of the digentic trematode, *Schistosoma spp.*. *Biomphalaria glabrata* (Say) primarily a neotropical, hermaphroditic pulmonate (Gastropoda: Planorbidae) acts as an intermediate vector to *S. mansoni* principally in the Antilles archipelago and certain South American countries.

The increased incidence of infection in these developing countries, in part, is due to increased population growth, limited water resources and agricultural technology. Techniques for the control of schistosomiasis have incorporated molluscicides, chemotherapy, habitat alteration and biological control. These methods have facilitated a containment of the disease in limited locations but not its eradication.

In order to improve strategies for control of the vector, this laboratory study was designed to explore the influence of substratum availability and population density on the life history of *B. glabrata*. Four initial cohort populations of 5, 10, 25 and 50 sexually immature snails were examined in five surface area modifications for a 25 week period. Augmentation of the surface area over that provided in the control aquaria was furnished through the addition of vertically suspended artifical aquarium plants. The factorial design allowed for the weekly examination of the parameters of individual growth rates, reproductive rates and population growth. The environmental conditions of water volume, depth, light, and temperature were controlled. Food was supplied in excess of requirements and a recirulating water supply system was designed to negate interferrence from hypothesized snail and/or plant derived metabolites.

Average growth curves for individuals of each of the twenty populations, plotted as the average shell diameter versus snail age, displayed asymptotic growth. The maximum average shell diameter was calculated using the Fort-Walford plotting method. These values ranged from 15.2 to 26.4 mm, with no discernable trend between the size and either variable. The rate of growth was evaluated following linearization of the growth curve. Regression analysis of the rate of growth and the dependent variables, snail density and surface area, yielded a statistically insignificant F value ($P = .05$).

Ovipositing commenced when the snails reached 9 mm shell diameter. The existance of a linear relationship was confirmed between the total number of egg masses and the number of reproductive snails for each population. The slope values from these plots were utilized to assess the influence of augmented surface area on reproductive rates. A regression analysis produced a statistically insignificant F value ($P = .05$).

Population growth was monitored by simultaneously plotting initial cohort survival and total population number over time. Following an initial period of population stability, representing sexually immature snails, each population entered a phase of logarithmic growth. This expanse was followed by a sudden decline in numbers. Depending on the intensity and duration of the growth phase, the populations tended towards equilibrium by exhibiting either a precipitous drop and incremental fluctuations, or a cyclic trend of damped oscillations prior to equilibration. The fluctuations in the numbers of snails and ultimate convergence upon a stabilized population can best be explained by changes in the survival rates of offspring. The intrinsic rate of natural increase 'r', for each population was calculated using an iterative solution. When examined in a multiple regression model, a statistically insignificant F value was obtained for the variable, surface area; however, a significant F value ($P = .05$) was yielded for snail density.

It is apparent that over the ranges examined, neither surface area augmentation nor snail density influenced the rate of morphometric growth or reproduction. Population growth appears to be influenced by snail density. This suggests that at high densities, populations are not regulated by reduced fecundity, but through increased juvenile mortality. To optimize molluscicide techniques it may be incumbent upon researchers to examine not only climatic events regulating population levels, but intrinsic control mechanisms as well.

GROWTH LINES IN ACETATE PEELS OF THE CHONDROPHORES OF *MYA ARENARIA* AND *M. TRUNCATA*. **John W. Ropes** and **Maurice K. Crawford.** National Marine Fisheries Service, Northeast Fisheries Center, Woods Hole Laboratory, Massachusetts.

The soft-shell clam, *Mya arenaria*, has been a traditional source of clam meats in New England since colonial days. Landings in 1984 were 7.9 million pounds of meats worth $19,842,000 to the fishermen. In past investigations of the clam's life history, age was determined from external valve rings. This often produced unsatisfactory results because of the poor definition of the rings formed in the valves of this deep burrowing benthic bivalve.

Recent investigators have reported finding useful internal age/growth lines in 35-40 μm-thick sections of the chondrophore in the left valve of soft-shell clams. In general, the fragile nature of the shell makes routine production of such thin sections technically difficult.

An alternate method was developed, based on a technique of preparing acetate peels of ocean quahog, *Arctica islandica*, valves for age determination. Internal age/growth structures in the chondrophores of *M. arenaria* and the truncate soft-shell clam, *M. truncata*, were revealed by radially